REMARKS

Claims 1-4 and 8-10 are pending in this application. Claim 1 is independent. Claim 1 has been amended and claims 5-7 have been canceled. No new matter is added.

Rejections Under 35 U.S.C. § 103 – *HATANO*

Claims 1-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,740,192 ("*Hatano*"). This rejection is respectfully traversed.

Applicants submit that the only example where an MBE method is taught in *Hatano* is Example II-4, according to which, the substrate 71 is "kept at a temperature of 650°C" where the deposition of semiconductor layers are performed on the substrate 71. (*Hatano*, col. 14, lines 18-31). Therefore, although *Hatano* may teach growing the layers at three temperatures using the MOCVD method, Applicants submit that *Hatano* teaches an MBE method where the problem of a low MBE growth temperature remains unsolved, because the growth temperature of the *Hatano* MBE method still has to be kept at 650°C.

The Examiner argues that one skilled in the art will follow the same protocol as far as temperature is concerned. (*5/29/2008 Final Office Action*, pages 4-5). Although Applicants disagree, the amended claim 1 further recites that "the ratio of the supplied ammonia to supplied elemental metal is within the range 10:1 to 10,000:1" and submit that *Hatano* does not appear to have any teaching in this regard.

As described in the present application, conventionally when an MBE process is applied there is difficultly achieving a high growth temperature, therefore, only a temperature in the range of about 570°C-620°C is obtained because the flux of ammonia to the growth chamber was low, leading to a low V/III ratio. Because of the low growth temperature, the quality of the InGaN layers is much lower than the quality of the InGaN layers grown by MOCVD. (*Specification*, page 6, lines 6-12).

However, in the method recited by claim 1, by achieving a V/III ratio of more than 10:1 during the growth process, an InGaN nitride semiconductor layer is allowed to be grown at a temperature well above those used in prior art MBE methods. (*Specification*, page 23, lines 11-19 and page 26, lines 1-10). Specifically, the method recited by claim 1 could grow at the first (Al, Ga)N layer at a first temperature (850-1050°C), grow the (In, Ga)N quantum well structure at a second temperature (650-

1000°C) and grow the second (Al, Ga)N layer at a third temperature (850-1050°C), the temperatures of which are chosen as desirable for the respective layers' growth and the temperature of which exceeds the temperature range achieved in conventional MBE methods.

In particular, the present application explicitly discloses that the ratio of the ammonia to the elemental metal supplied to the growth chamber is preferably in the range 10:1 to 10,000:1. This high V/III ratio allows the GaN and InGaN layers to be grown by MBE at temperatures well above those used in prior MBE growth methods and leads to improved material quality. (*Specification*, page 23, lines 11-16).

For at least these reasons, Applicants submit that *Hatano* fails to teach or suggest the amended claim 1, and respectfully request that the rejection of claim 1 be withdrawn and further request that the rejections of claims 2-4 and 8-10 also be withdrawn, at least by virtue of their dependency upon claim 1.

CONCLUSION

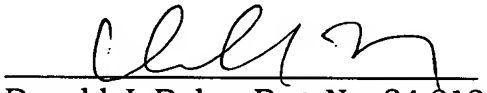
In view of the above remarks and amendments, Applicants respectfully submit that each of the rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Donald J. Daley, Reg. No. 34,313 at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By 

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